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 Office of Global Analysis	<div style="text-align: right;">USDA Foreign Agricultural Service <h1 style="color: red; margin: 0;">Iraq: Crop Progress Report</h1><p style="margin: 0;">MY 2010/11</p></div>
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December Summary

December 28, 2009

- (1) The normal planting window for winter grain crops (wheat & barley) in Iraq is closing, with crops in most years being sown before the end of December. Though the current outlook for national winter grain production is uncertain at this early stage, an extremely favorable rainfall pattern during November and December has enabled dryland non-irrigated crops to be sown in many regions which have lay barren for the past two years. This favorable turn of events means that Iraq has the potential to produce a near-normal grain harvest if this rainfall pattern continues and if irrigated crop acreage and yields are near-normal this year. However, the fate of the country's important irrigated grain crops are uncertain, given a history of deficient water supplies from Turkey during the past two years and an announced intention by the Iraqi government to conserve available water supplies and limit irrigated wheat acreage this year. The actual harvest outlook, therefore, will depend on how favorable the winter rainfall pattern and irrigation supplies turn out to be. Irrigated winter grains in Iraq typically receive between one and three irrigation applications per season, with those receiving three irrigations producing the highest yields. A significant reduction in the number of fields receiving optimal irrigation would result in lower than average national irrigated crop yields.
- (2) Cumulative precipitation during the planting period of the new MY 2010/11 winter grain growing season has been extremely positive, with well-above normal rainfall occurring in most regions (Figure 1). However, it should be noted that last years growing season (MY 2009/10) got off to a similarly favorable start, only to revert to drought in early winter (Figure 2). Cumulative precipitation for the first two decades (first 20 days) of December 2009 was in excess of 200 percent of normal for large parts of southern Iraq (Figure 3), but was less favorable for the rainfed crop regions in northern Iraq. The northern regions have, however, received very beneficial moisture over the past two months and are assumed to have built up some stored soil moisture reserves to aid early crop germination. But continued favorable rains will be required throughout the region to enable rainfed grain crops to get fully established and to yield near-normal levels. In the short term, the rainfall forecast for the week ahead indicates that moderate rainfall (10-15mm) is expected over portions of northern Iraq, while much lighter showers are expected in much of the remainder of the country's winter grain regions (Figure 4).
- (3) At the national level, vegetation index data analysis indicates that southern irrigated crop areas showed a burst of development during December, while the rainfed regions in the north showed only marginal growth (Figures 5, 6, 7). Most rainfed areas are indicating delayed development or very slow crop emergence, although As-Sulaymaniyah is the major exception – with vigorous early crop development evident (Figure 6).

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- (4) A comparative analysis of satellite vegetation index data (NDVI) from 2008 and 2009 (Figure 8) showed evidence that winter grain crop establishment made favorable progress in parts of both northern and southern Iraq during December. In particular, the marginal or opportunistically cropped western portion of Ninawa showed strong development compared to last year, as well as western Dahuk, southern Arbil, and As-Sulaymaniyah (Figure 9). However, when compared to the long-term normal (Figures 10 & 11) crop establishment throughout Ninawa's and Arbil's core producing regions are well below normal. So there are signs of tentative early progress in major northern rainfed growing areas compared to last year's drought, but crop development is nowhere near normal in the core producing regions. To achieve a substantial recovery in rainfed grain production this year, these core regions must show strong growth in coming months. As far as southern Iraq is concerned, favorable progress in crop establishment compared to last year is evident in many of the primarily irrigated regions (Figure 12), with the major exception being the governorates of Diyala and Salah ad Din. However, when compared to the long-term average, most growing areas except Diyala, Al-Qadisiyah, and portions of Wasit are doing well (Figure 13). In general, the substantial differences in crop development illustrated in these maps provide a cautionary warning that despite very favorable rainfall so far this year, early crop conditions over significant areas of Iraq are much below normal. Crop development will be closely monitored in coming months to determine whether recovery from these early unfavorable conditions is evident.
- (5) AWiFS moderate resolution satellite imagery acquired over the rainfed grain producing governorates of Dahuk (Figure 14) and Ninawa (Figure 15) show widespread evidence of field preparation and planting, as evidenced by darker fields next to lighter ones. We surmise that the lighter fields are covered by wheat and barley crop stubble, whereas the darker fields have been tilled or burned (Figure 16). The relatively large amount of land being prepared for crops in these previously drought decimated regions is indicative of attempts by Iraqi farmers to produce a sizable winter grain harvest this year. In some of the fields green winter grain vegetation has evidently begun to emerge. The appearance of emergence over untilled fields in Dahuk (Figure 16), leads us to suspect that modern conservation tillage cropping systems are in use in Kurdistan. Whether or not farmers in the major rainfed grain growing regions achieve a recovery in regional grain production will be heavily dependent on favorable rainfall conditions.
- (6) The appendix contains national production maps for wheat (Figure A1) and barley (Figure A2), the crop calendar for Iraq (Figure A3), a winter grains crop classification map for MY 2009/10 (Figure A4), and a map of aboveground Iraqi water resources (Figure A5).

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Cumulative Precipitation: September 1 - December 20

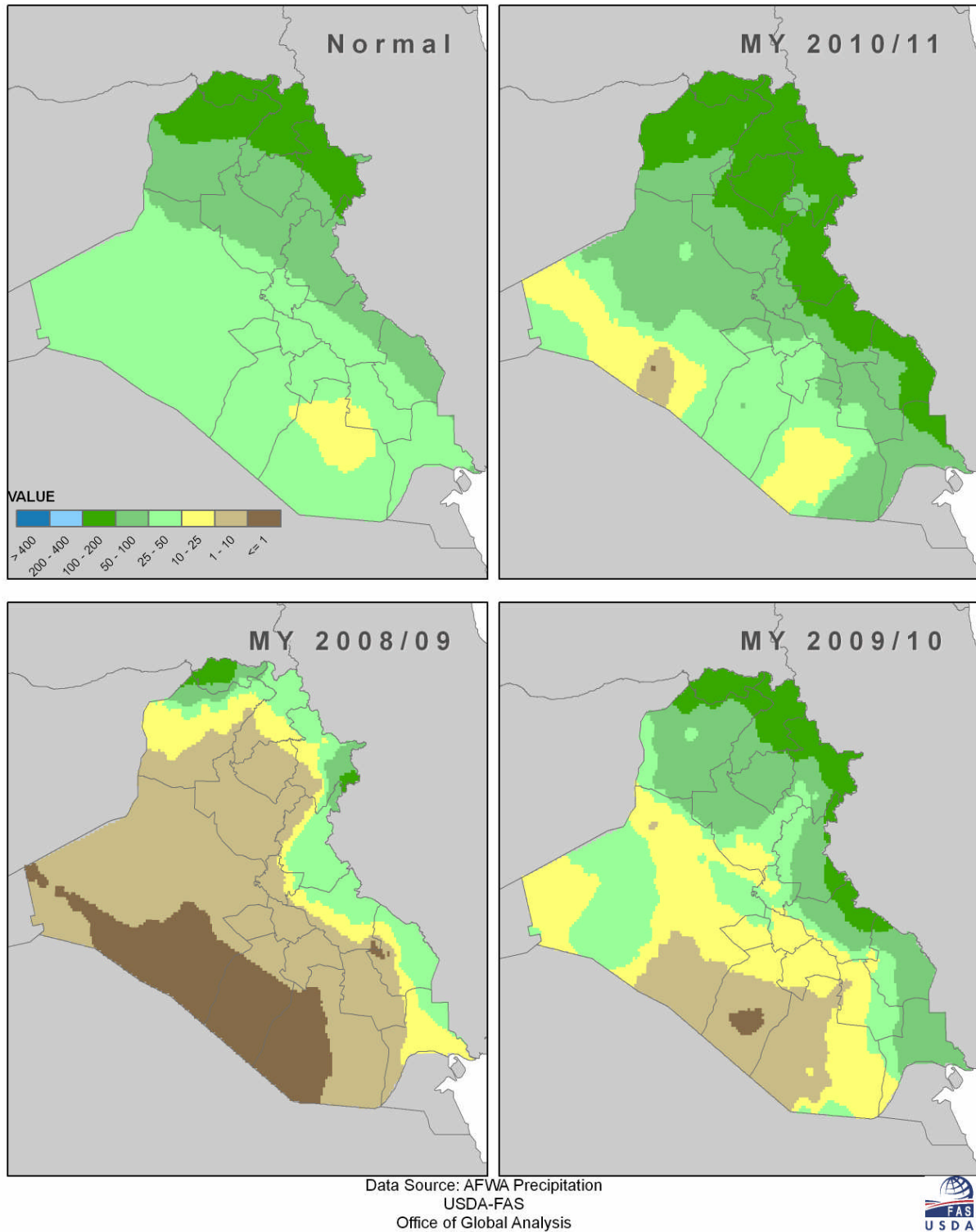


Figure 1. Season to date cumulative precipitation, September 1 to December 20. Current year compared against previous two crop seasons.

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Cumulative Precipitation: December 1 - 20

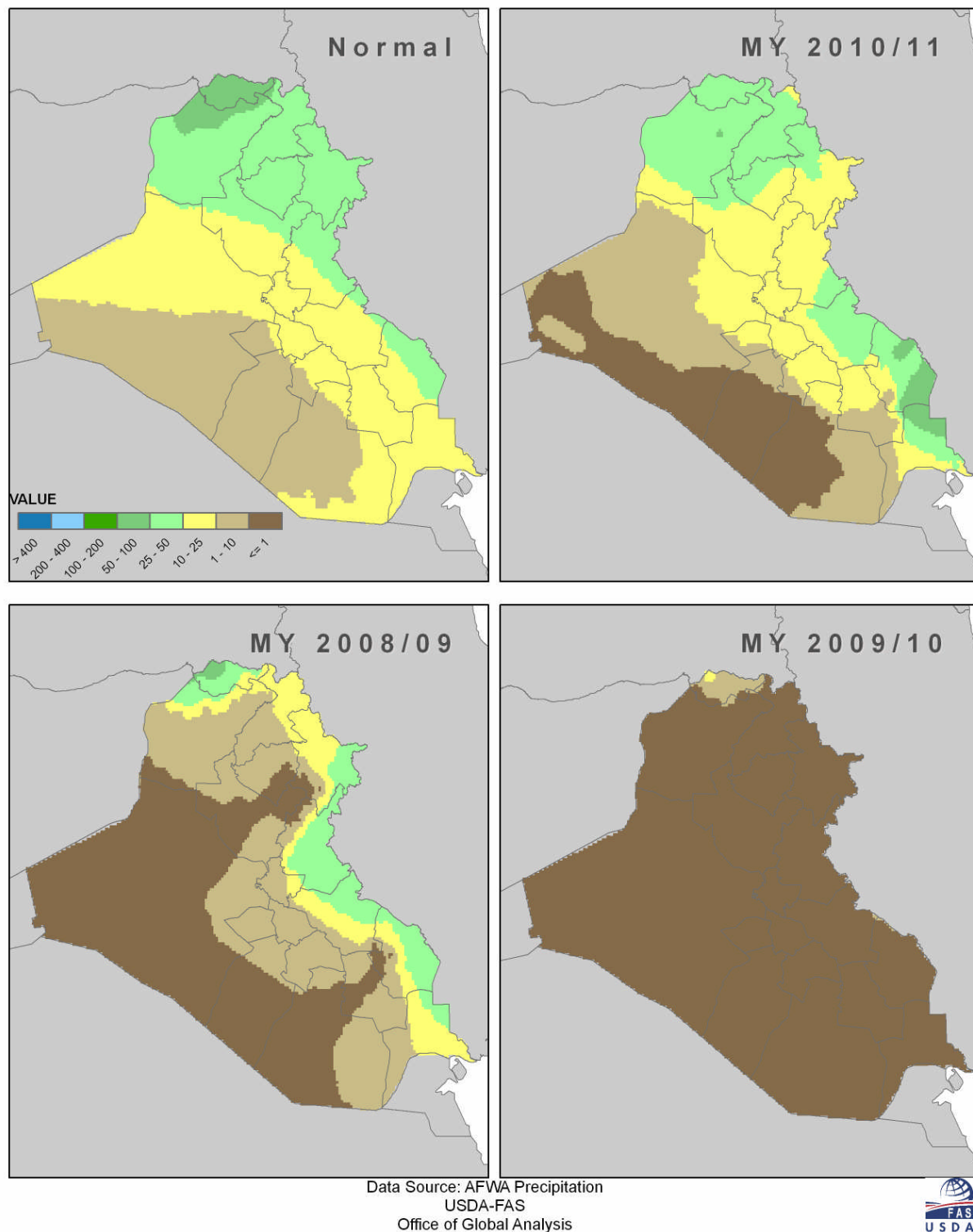
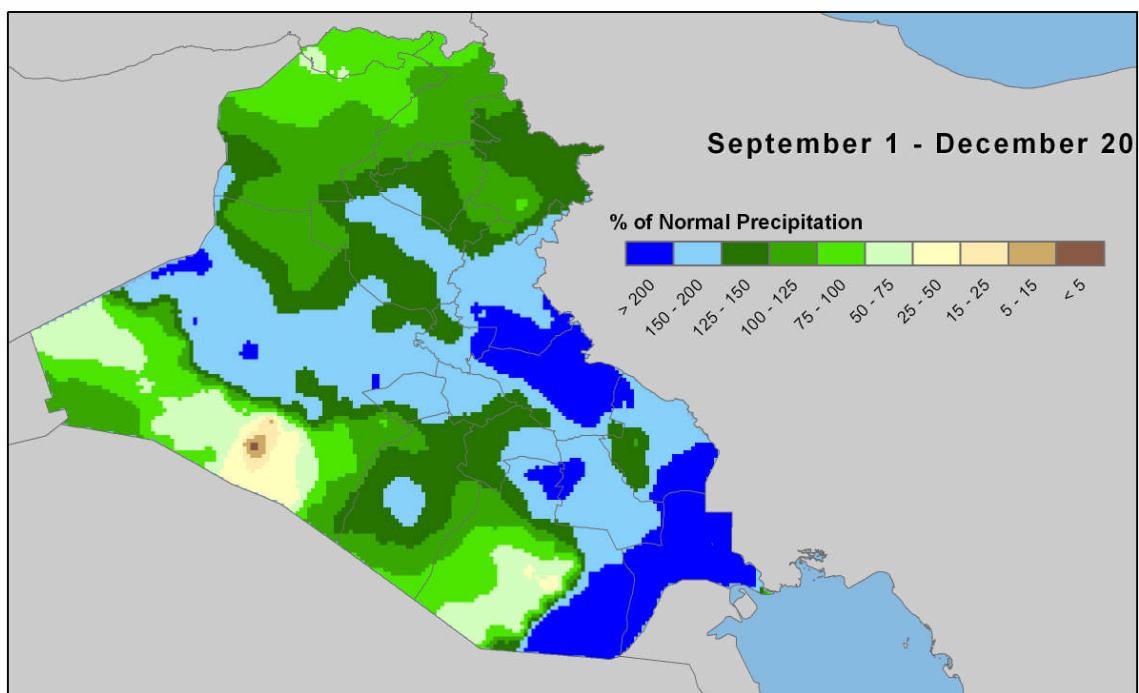
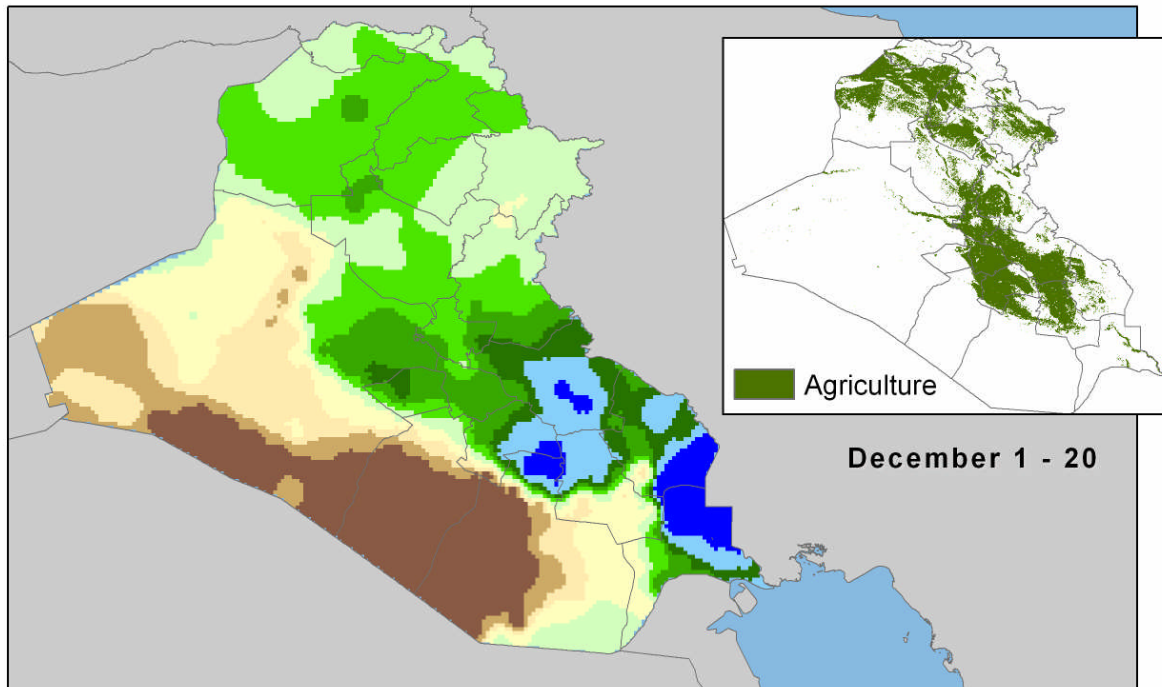


Figure 2. Cumulative precipitation, December 1 - 20. Current year compared against previous two crop seasons.

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Percent of Normal Precipitation



Data Source: AFWA Precipitation
USDA-FAS, Office of Global Analysis, IPAD
Crop Explorer

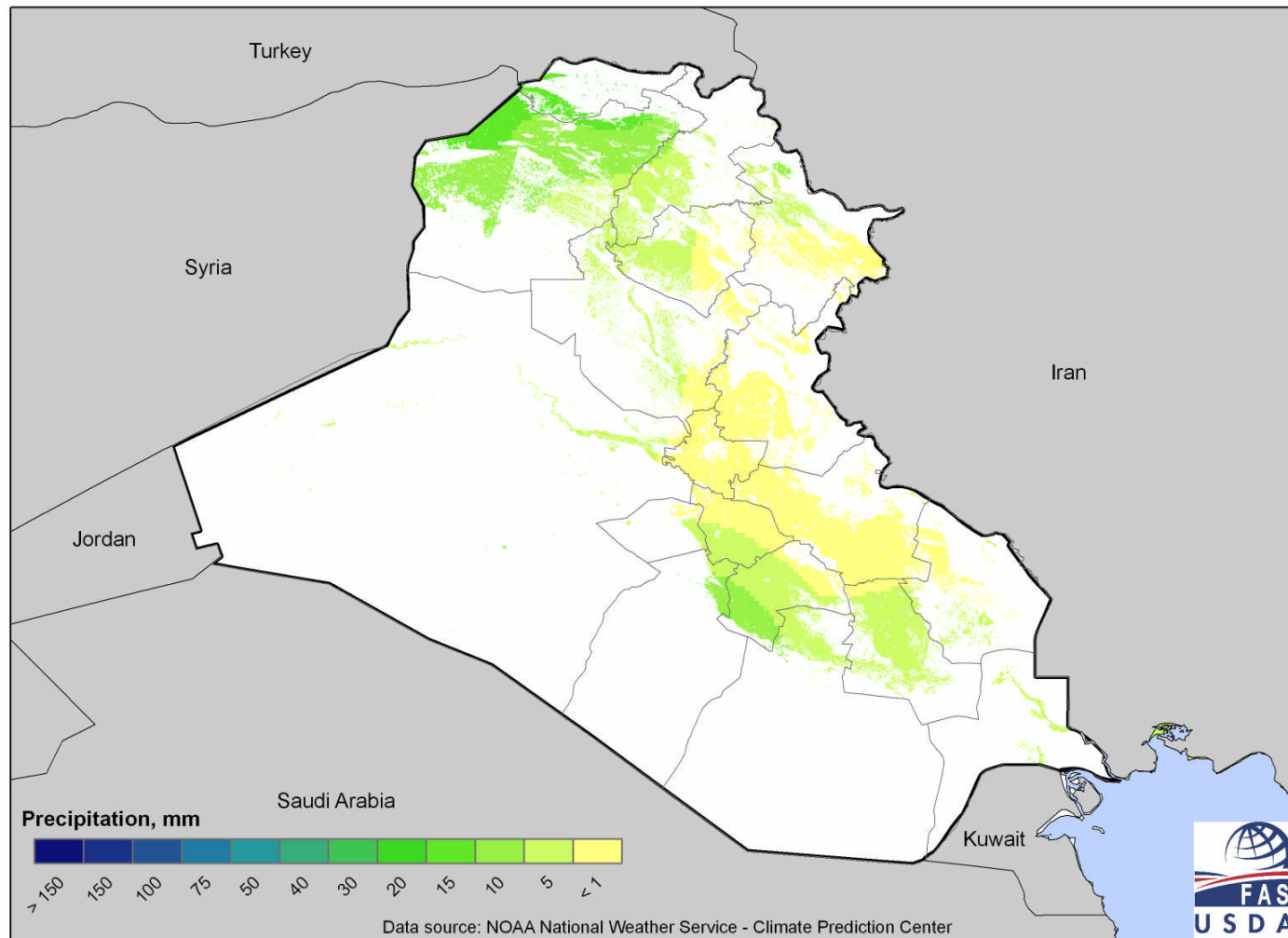
Figure 3. Monthly and season-to-date percent of normal precipitation for MY 2

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**7-day Precipitation Forecast over Agricultural Lands:
December 23 - 30, 2009**



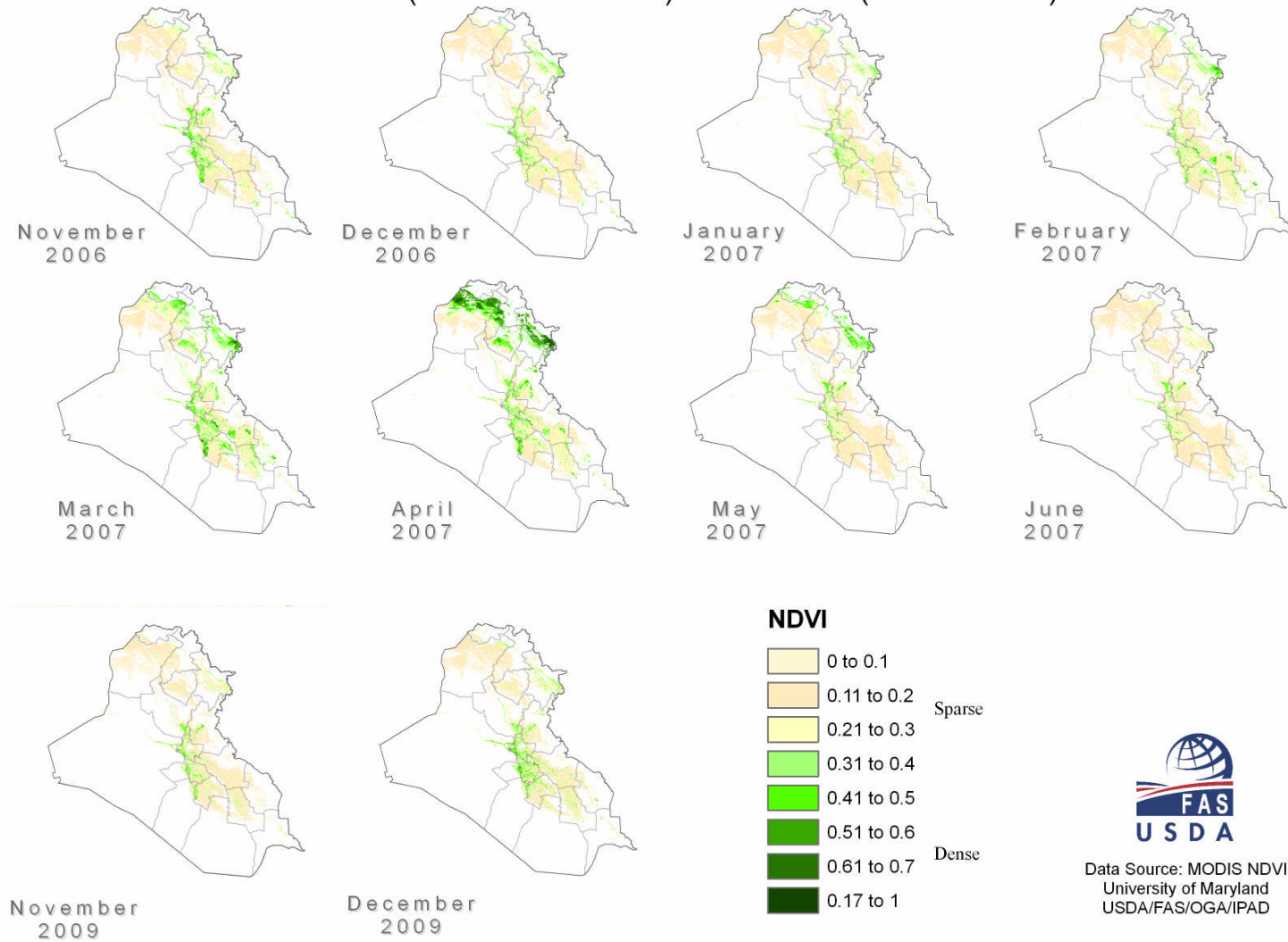
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Figure 4. Seven-day precipitation forecast.

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**MODIS NDVI Time Series: MY 2007/08 Winter Grains Growing
Season (Benchmark Year) vs. Current (MY 2010/11)**



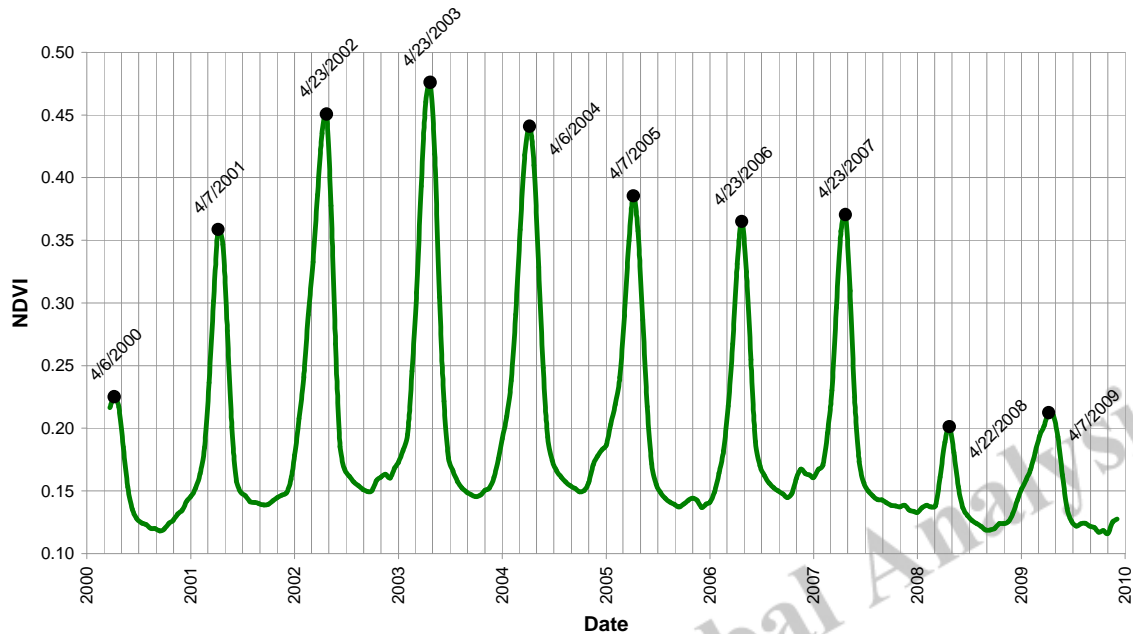
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Figure 5. Vegetation growth through the winter grains growing season.

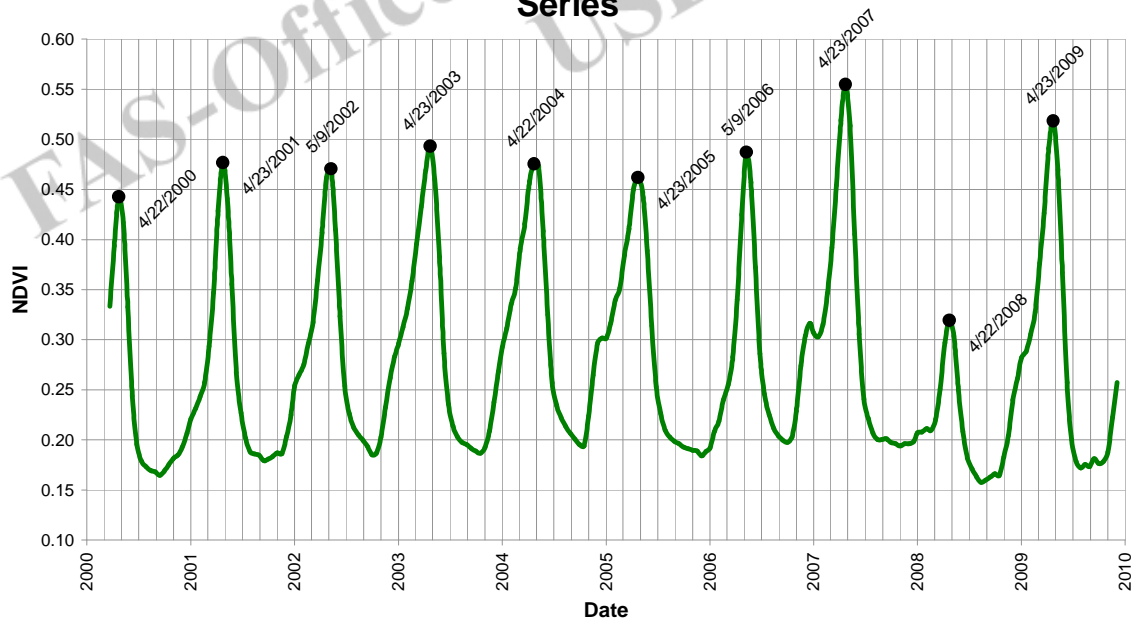
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Arbil, Iraq Rainfed Agriculture NDVI Time Series



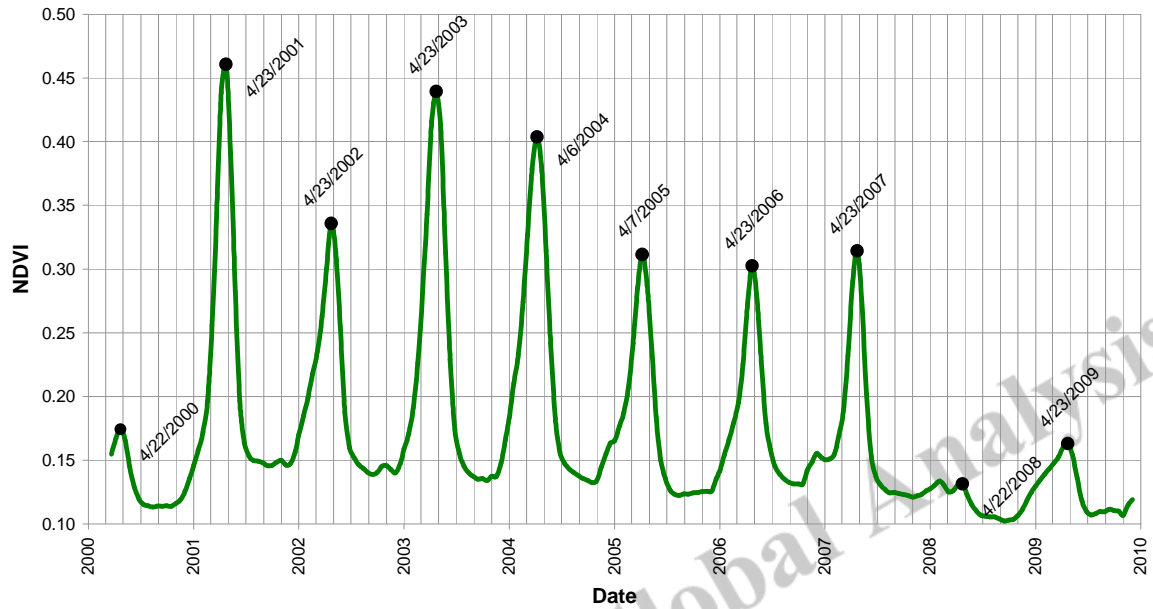
As-Sulaymaniyah, Iraq Rainfed Agriculture NDVI Time Series



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Figure 6a. MODIS NDVI time-series: important northern rainfed agricultural provinces.

Ninawa, Iraq Rainfed Agriculture NDVI Time Series



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At-Tamin, Iraq Rainfed Agriculture NDVI Time Series

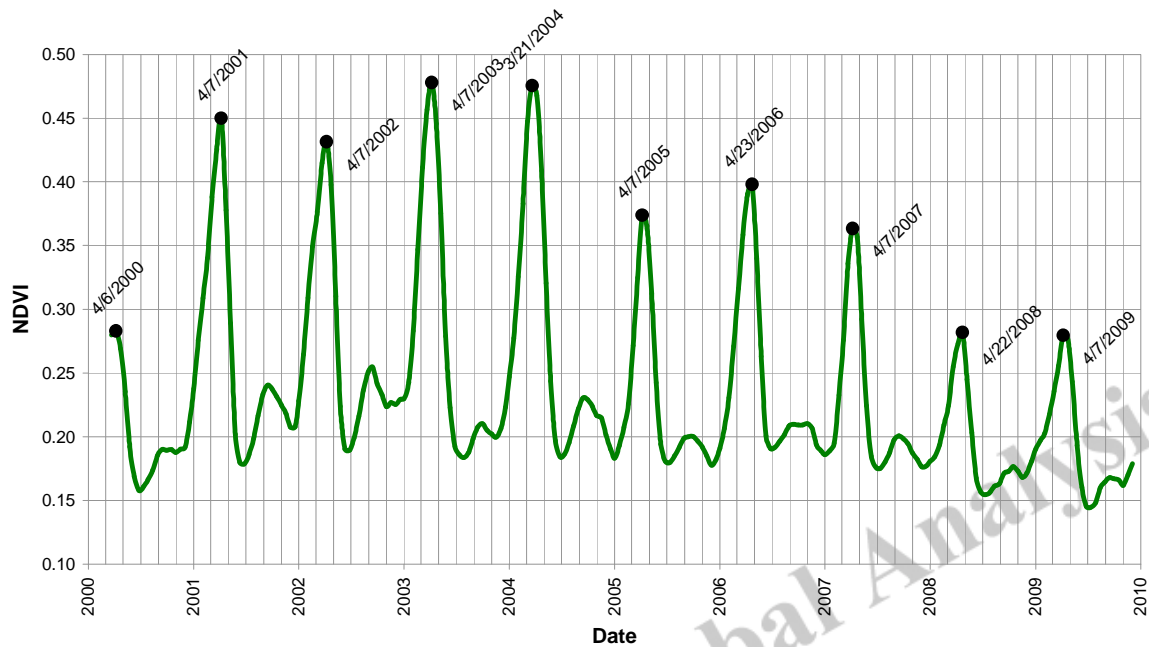
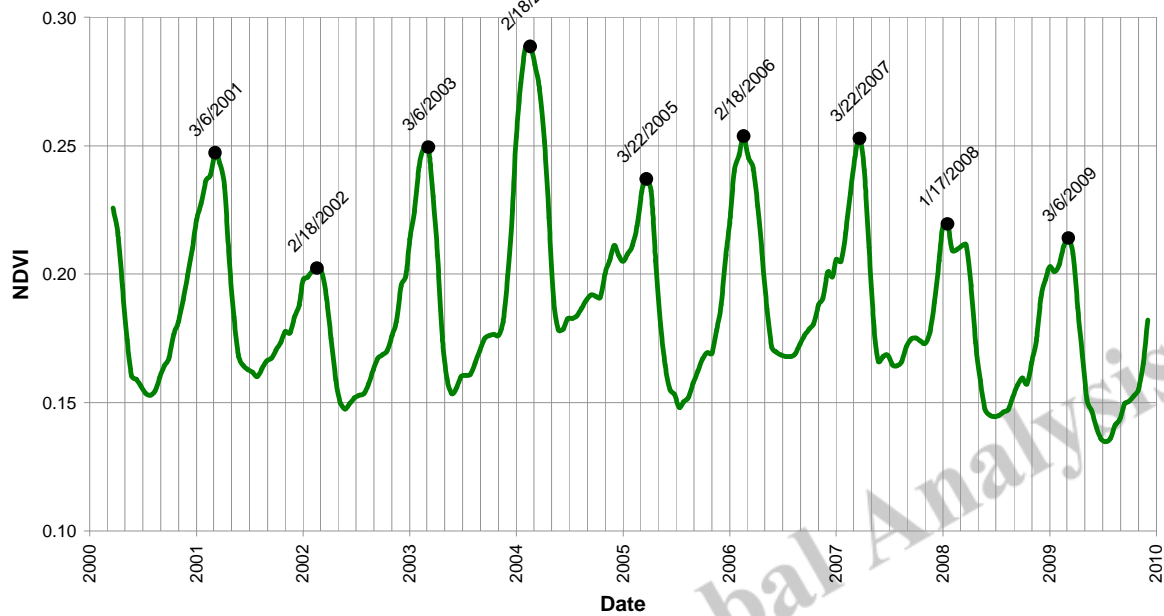


Figure 6b. MODIS NDVI time-series: important northern rainfed agricultural provinces.

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Al-Qadisiyah, Iraq Irrigated Agriculture NDVI Time Series



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Babil, Iraq Irrigated Agriculture NDVI Time Series

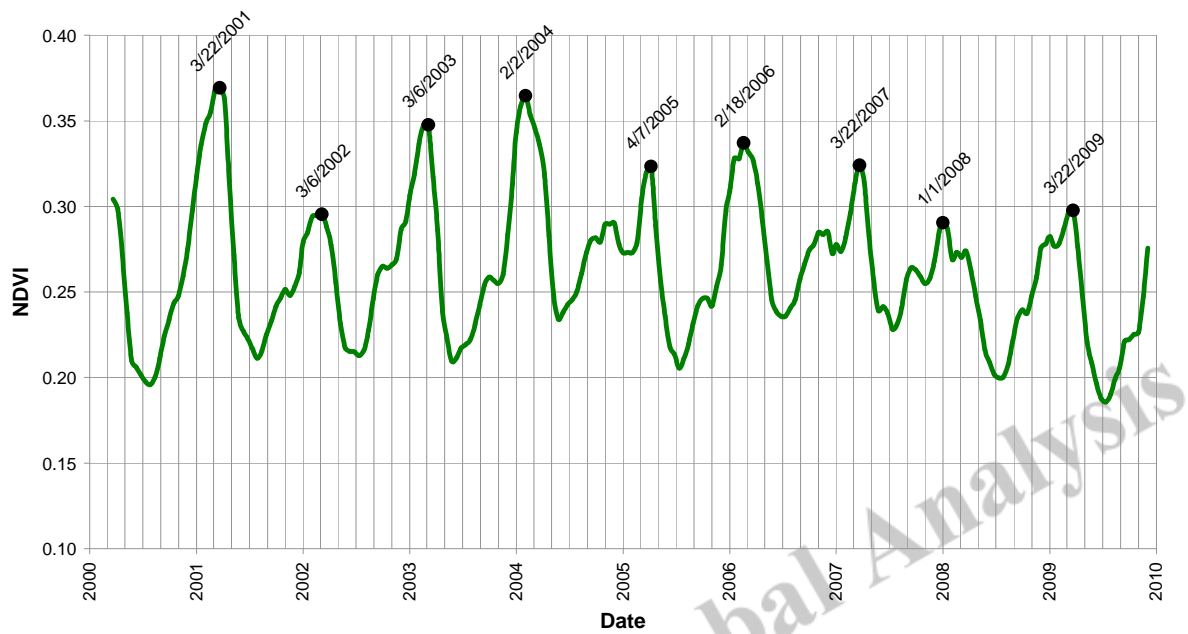
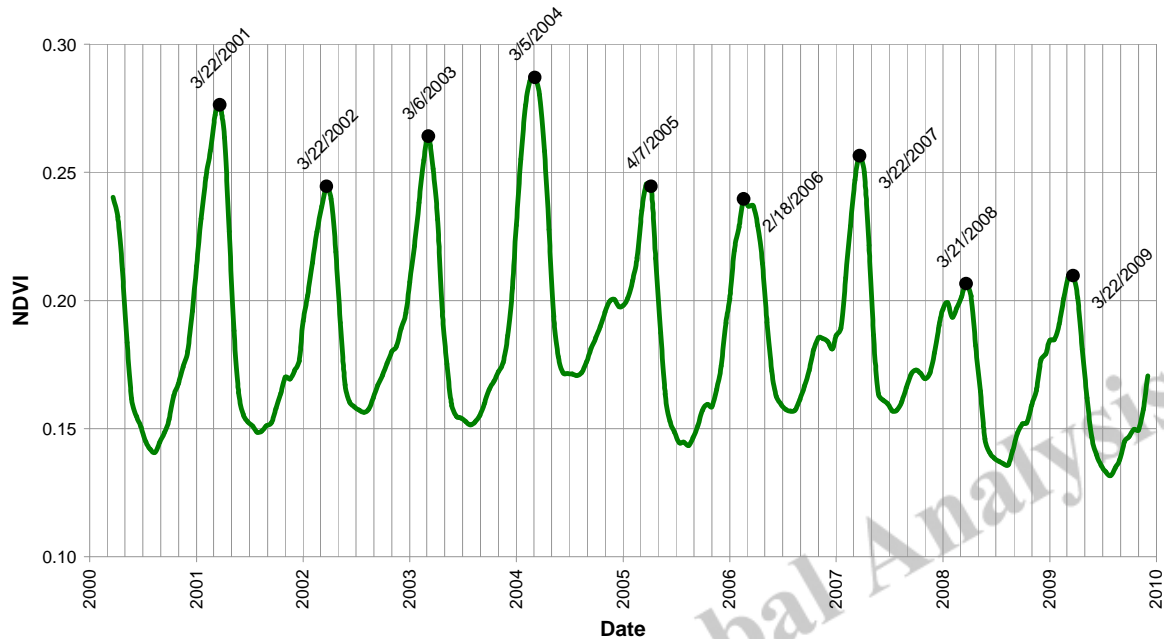


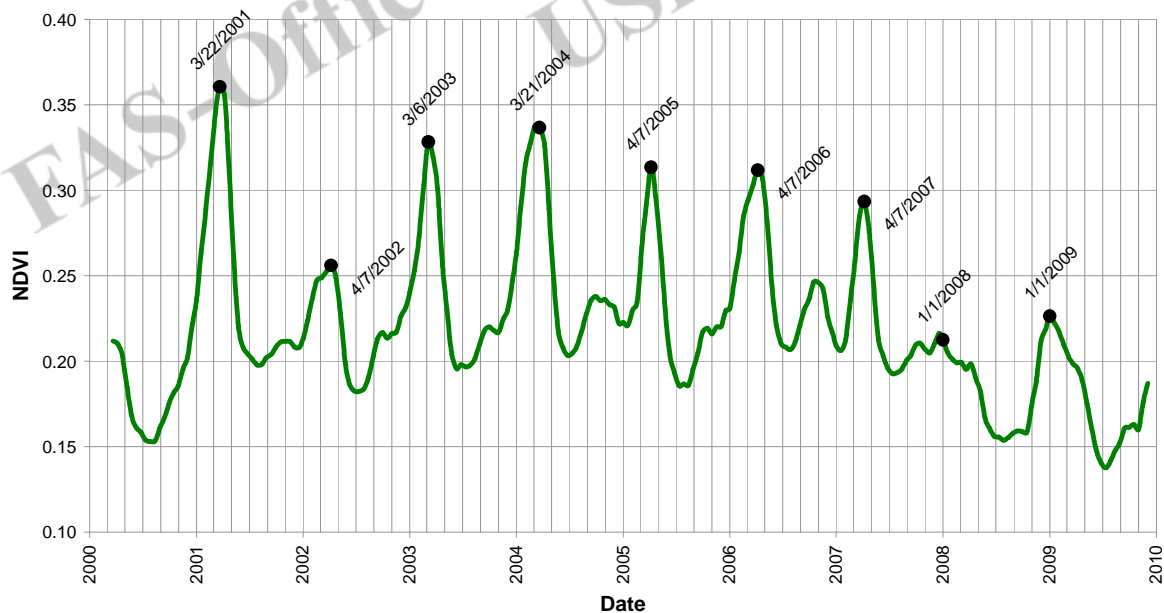
Figure 7a: MODIS NDVI time-series: important southern irrigated agricultural provinces.

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Wasit, Iraq Irrigated Agriculture NDVI Time Series



Diyala, Iraq Irrigated Agriculture NDVI Time Series



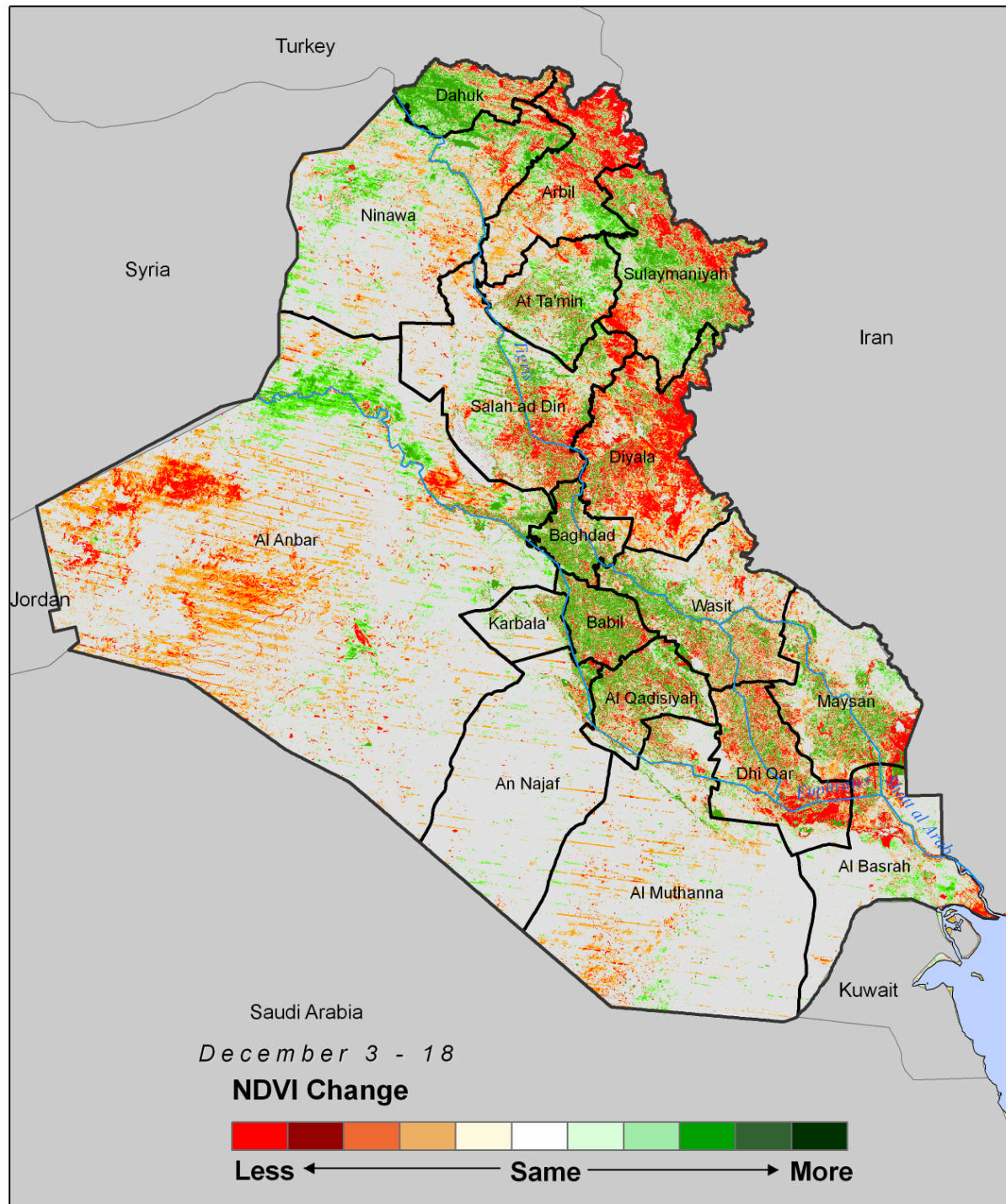
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Figure 7b: MODIS NDVI time-series: important southern irrigated agricultural provinces.

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MODIS NDVI Change: MY 2010/11 vs. MY 2009/10

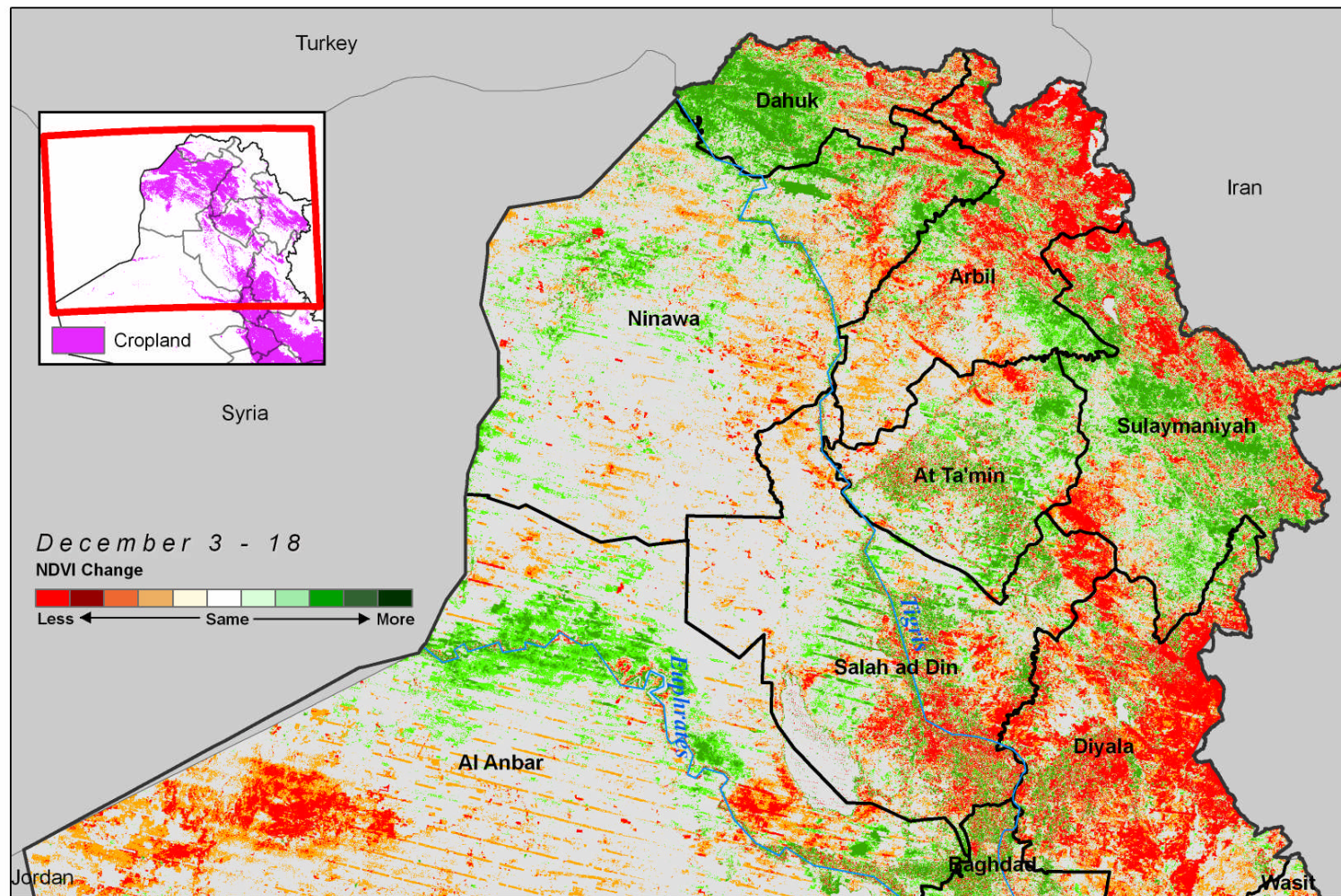


Data Source: MODIS 16-Day NDVI
Data Provided by: University of Maryland
Supporting: USDA/FAS/OGA/IPAD

Figure 8. Change in MODIS NDVI: MY 2010/11 vs. MY 2009/10 drought year.

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MODIS NDVI Change in Northern Iraq: MY 2010/11 vs. MY 2009/10



Data Source: MODIS 16-Day NDVI
Data Provided by: University of Maryland
Supporting: USDA/FAS/OGA/IPAD



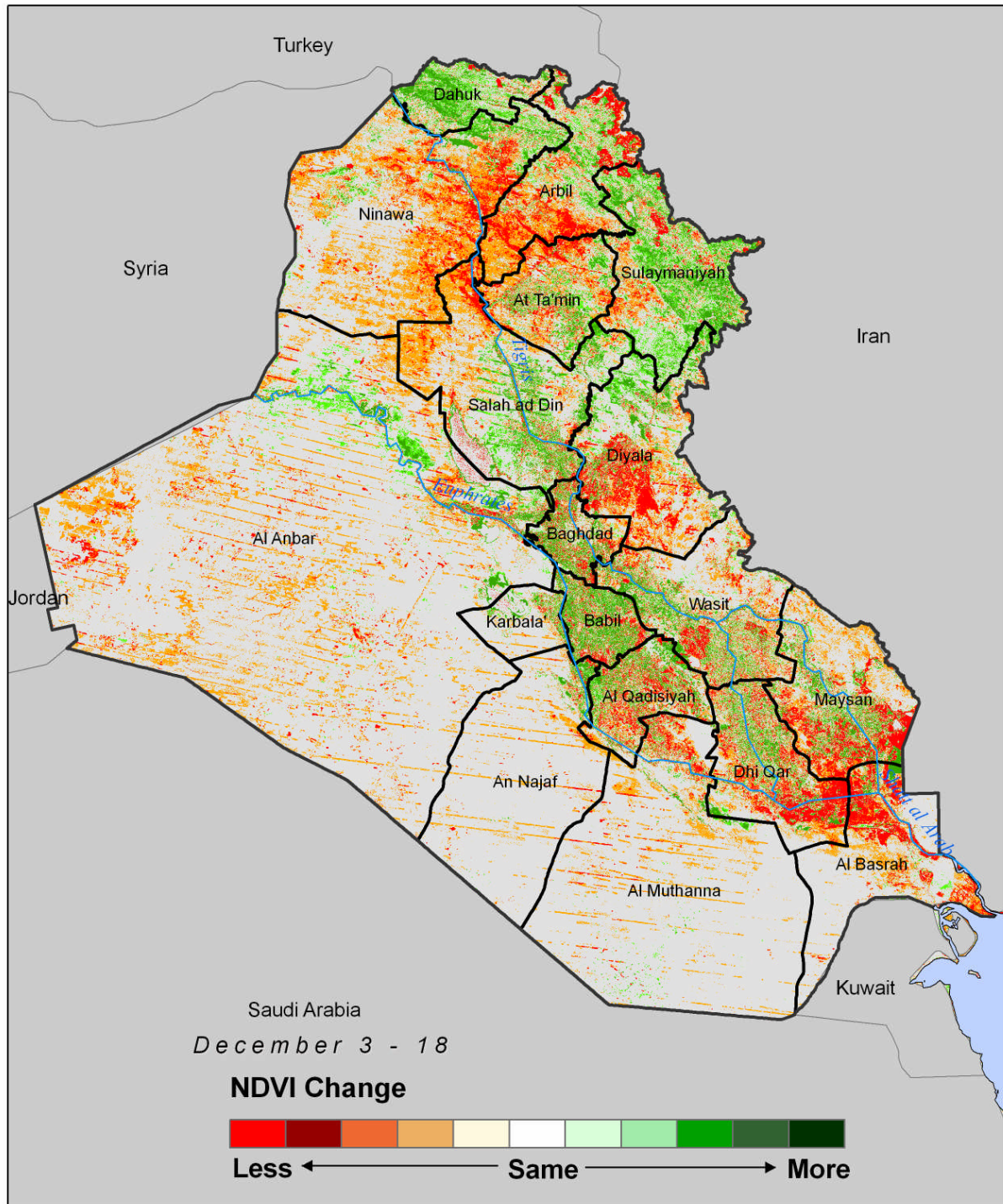
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Figure 9. Change in MODIS NDVI for northern Iraq: MY 2010/11 vs. MY 2009/10 drought year.

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MODIS NDVI Change: MY 2010/11 vs. 6 Year Mean

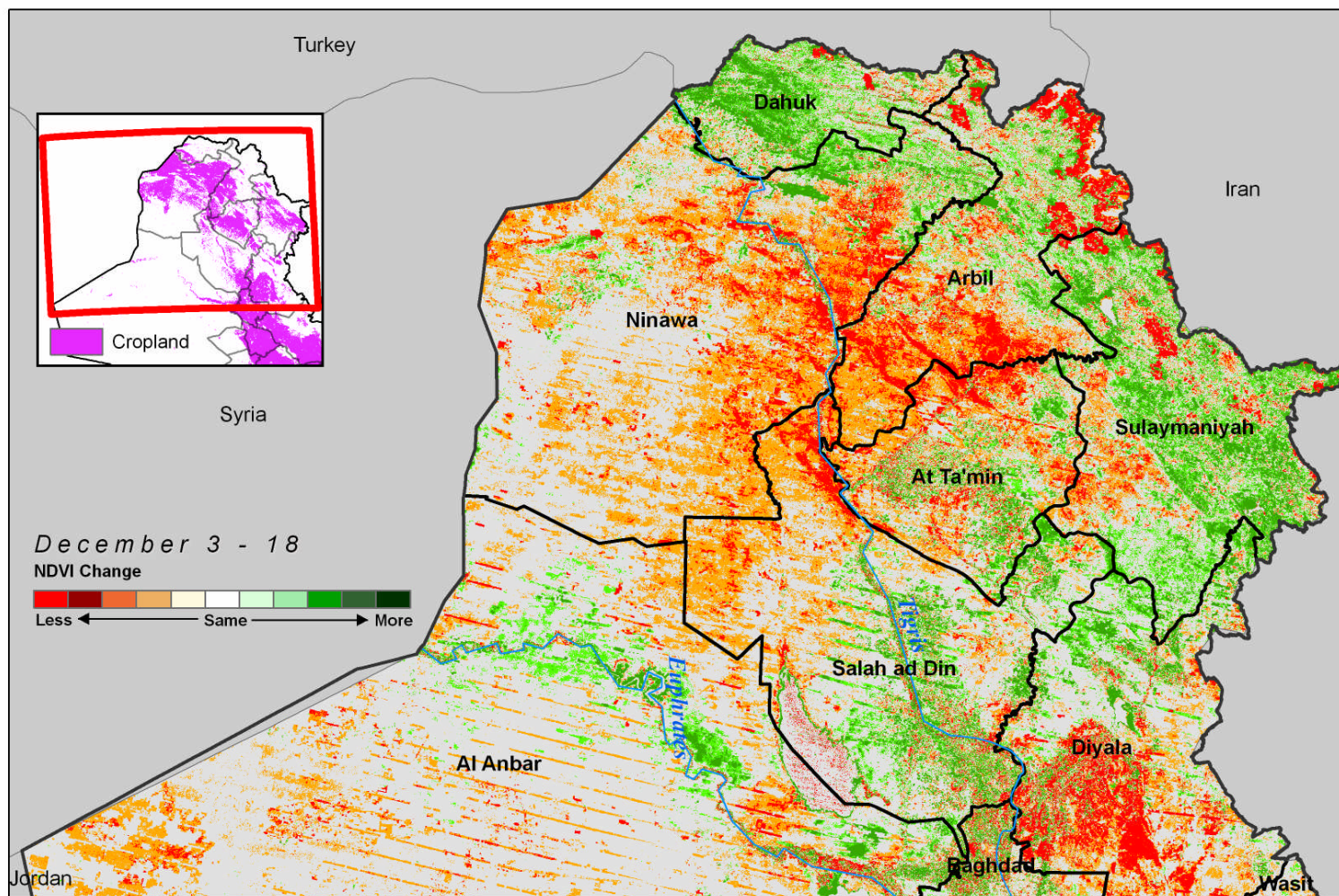


Data Source: MODIS 16-Day NDVI
Data Provided by: University of Maryland
Supporting: USDA/FAS/OGA/IPAD

Figure 10. Change in MODIS NDVI: MY 2010/11 vs. 6-year average.

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MODIS NDVI Change in Northern Iraq: MY 2010/11 vs. 6 Year Mean



Data Source: MODIS 16-Day NDVI
Data Provided by: University of Maryland
Supporting: USDA/FAS/OGA/IPAD



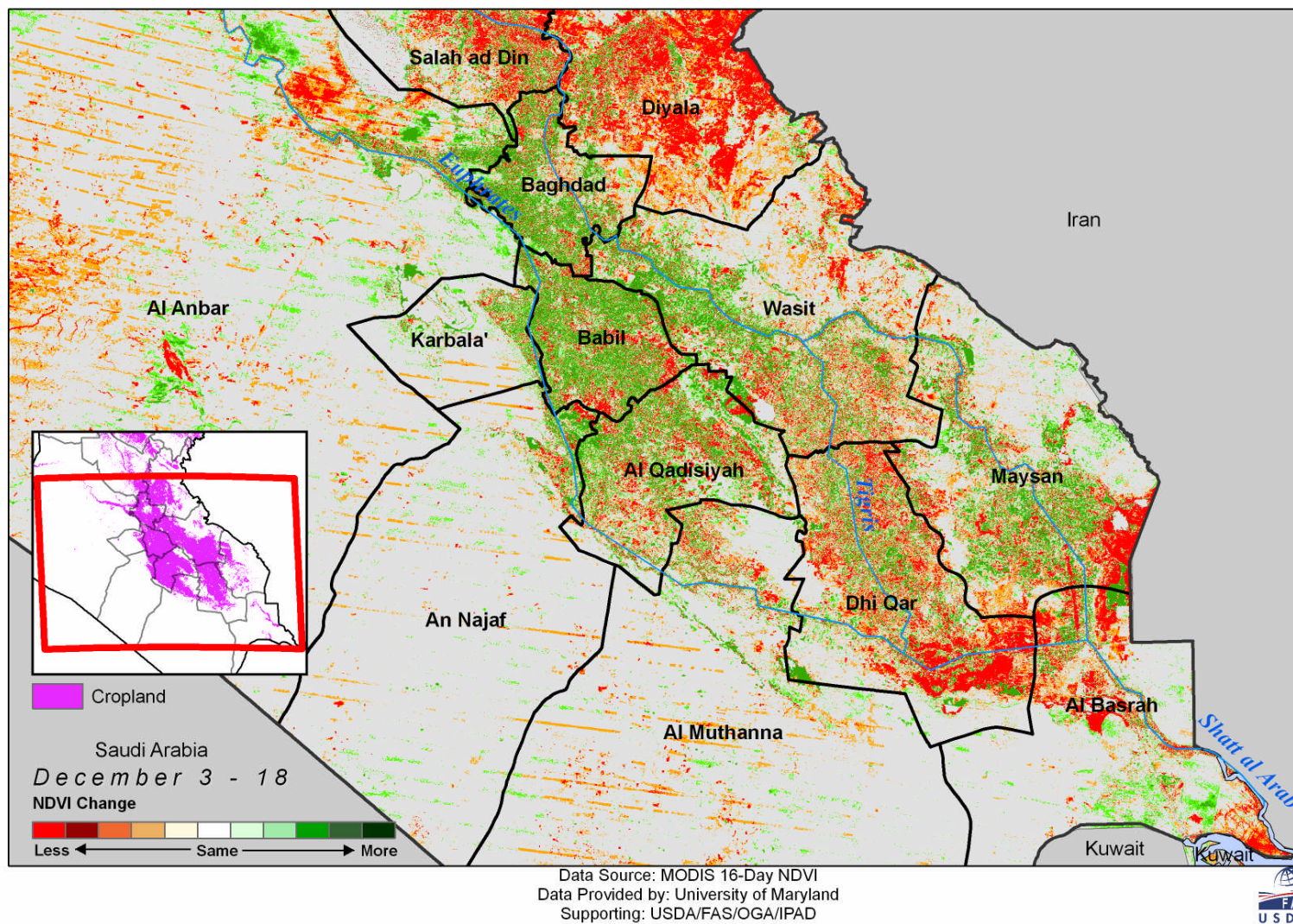
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Figure 11. Change in MODIS NDVI for northern Iraq: MY 2010/11 vs. 6-year average.

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MODIS NDVI Change in Southern Iraq: MY 2010/11 vs. MY 2009/10



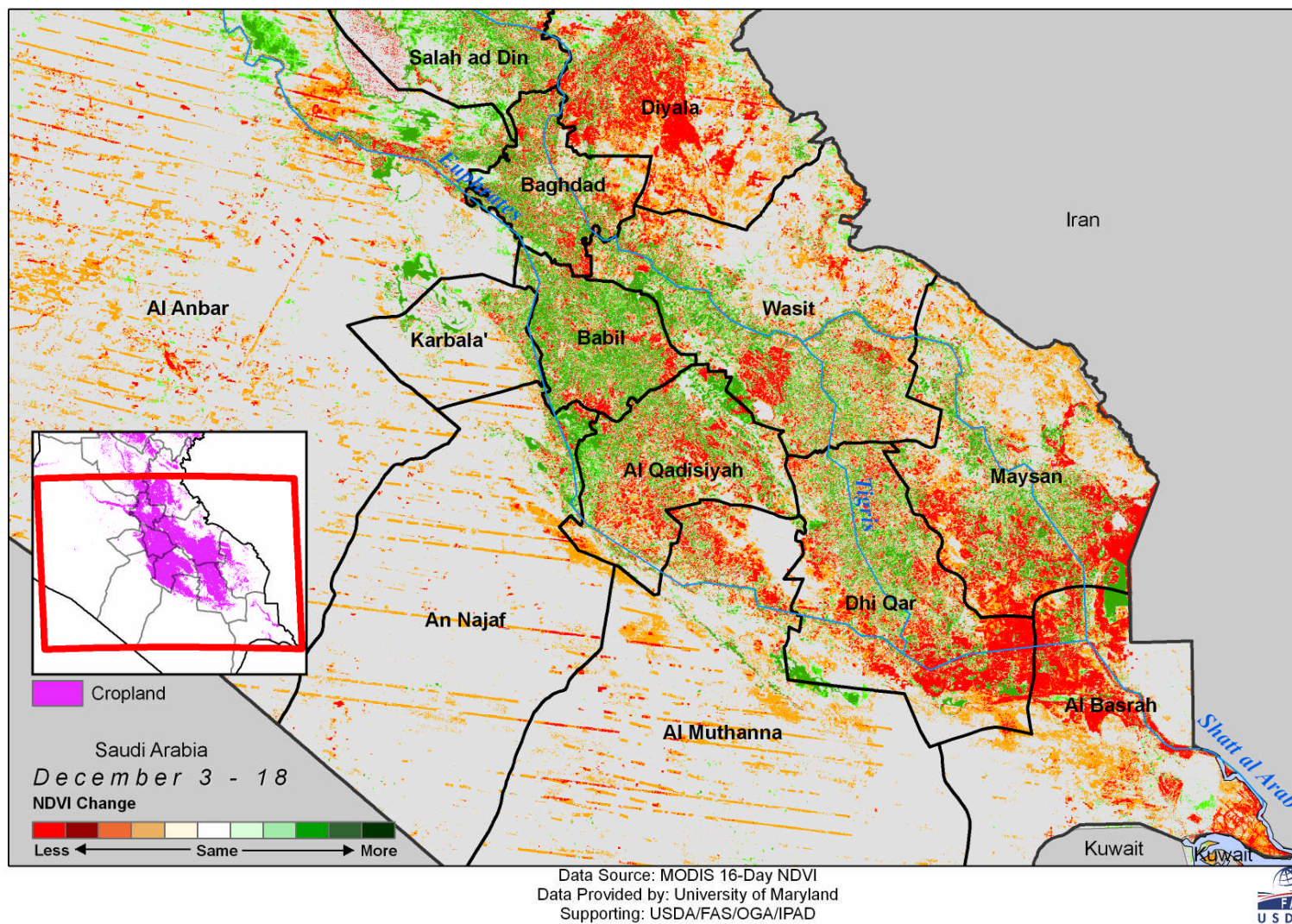
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Figure 12. Change in MODIS NDVI for southern Iraq: MY 2010/11 vs. MY 2009/10 drought year.

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MODIS NDVI Change in Southern Iraq: MY 2010/11 vs. 6 Year Mean



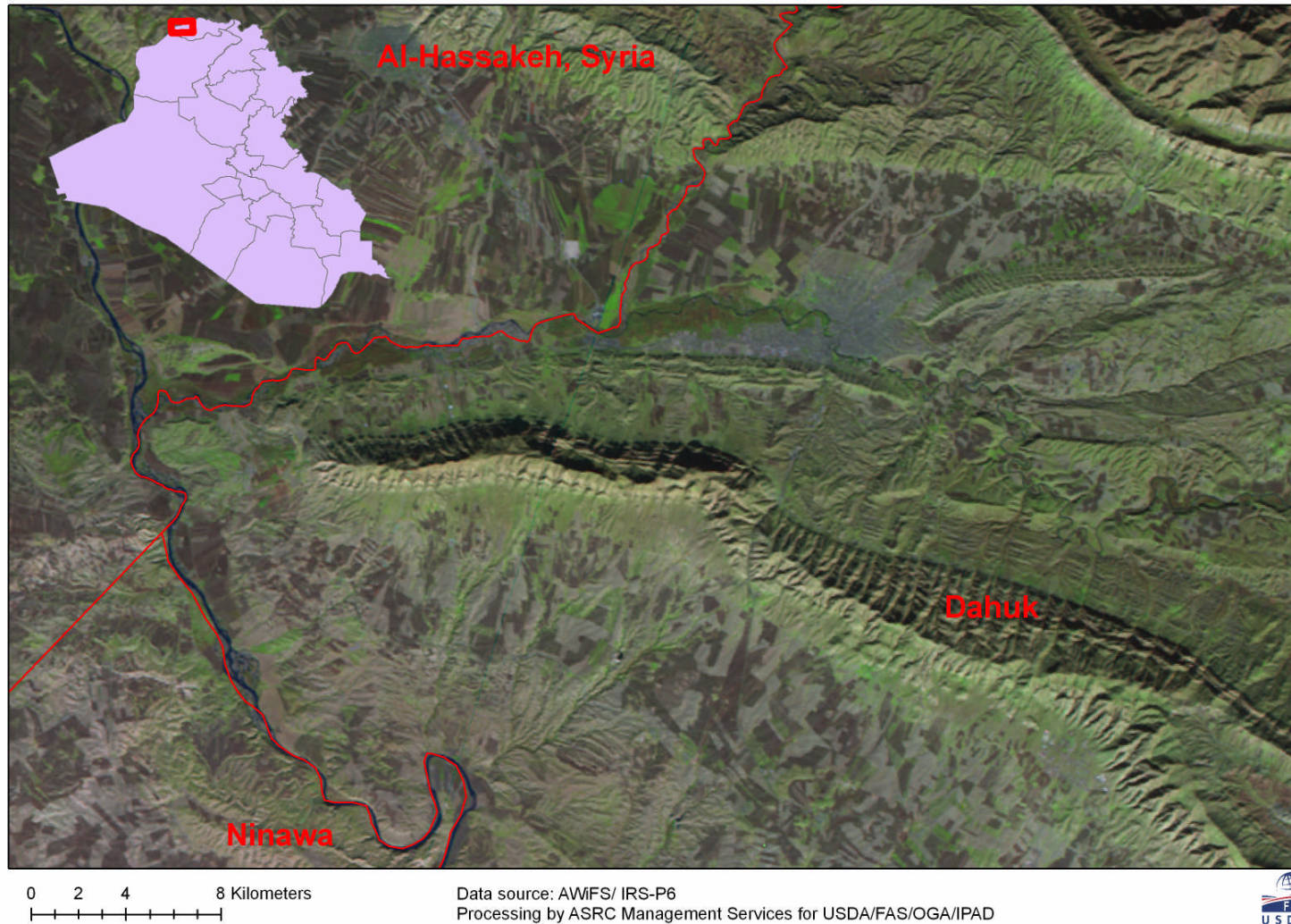
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Figure 13. Change in MODIS NDVI for southern Iraq: MY 2010/11 vs. vs. 6-year average.

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AWiFS: Agriculture in Western Dahuk Province, Iraq
2 December 2009



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Figure 14. False-color AWiFS image of western Dahuk province.

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AWiFS: Tillage in fields - Northwestern Ninawa Province, Iraq
2 December 2009



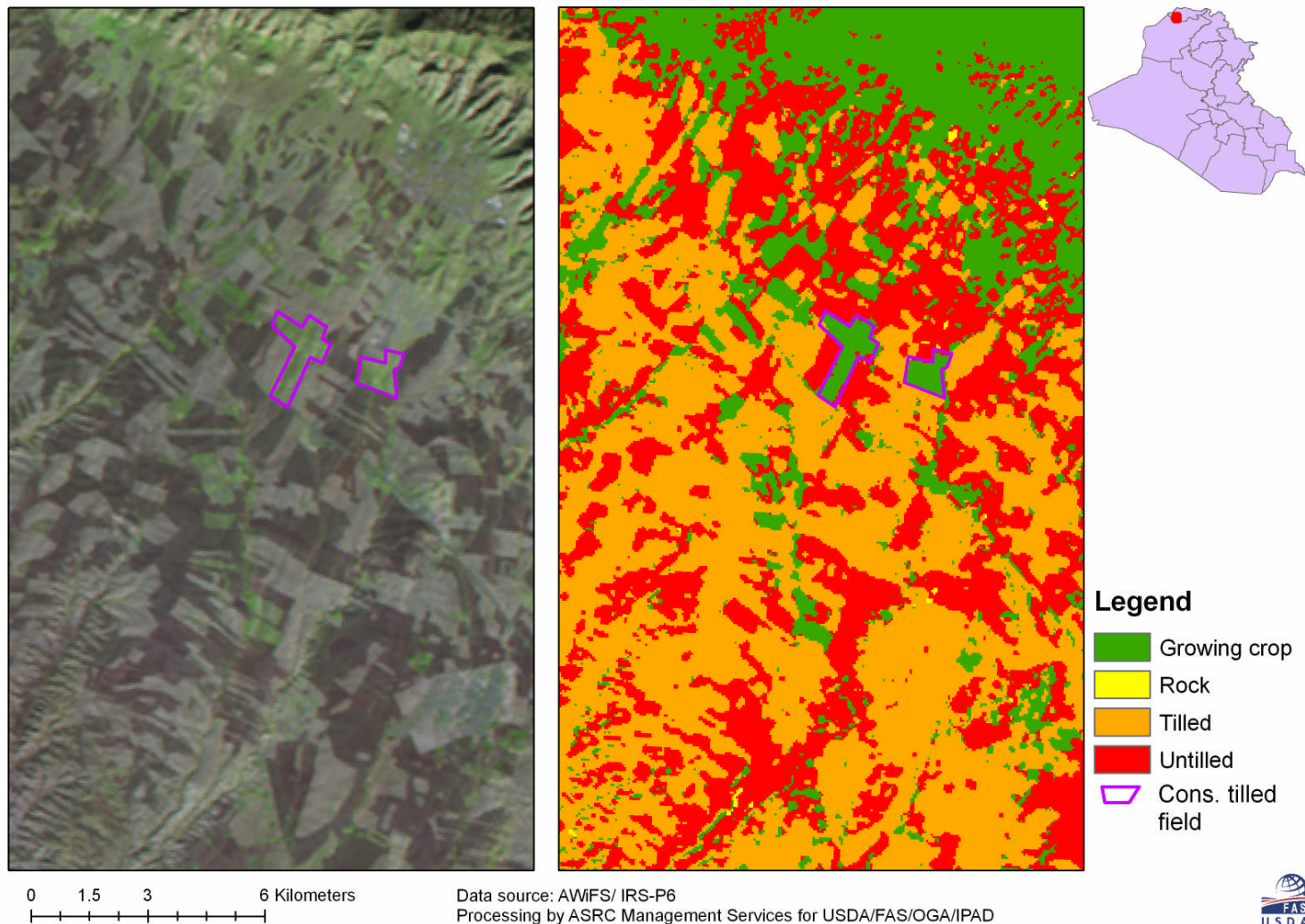
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Figure 15. False-color AWiFS image of northwestern Ninawa province.

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AWiFS: Agriculture in Western Dahuk Province, Iraq
2 December 2009



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Figure 16. Examples of tilled and untilled fields, and growing crops.

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APPENDIX

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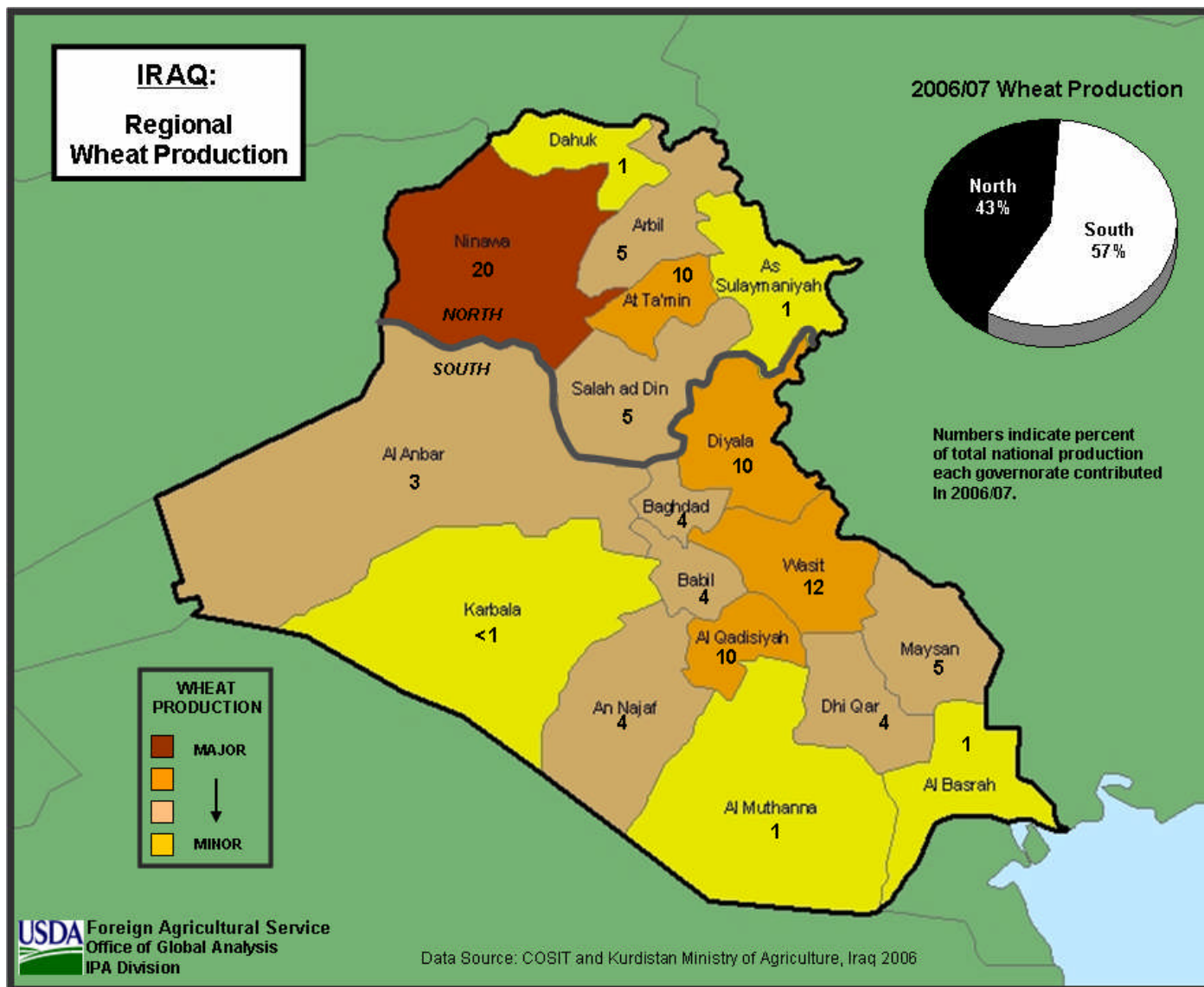
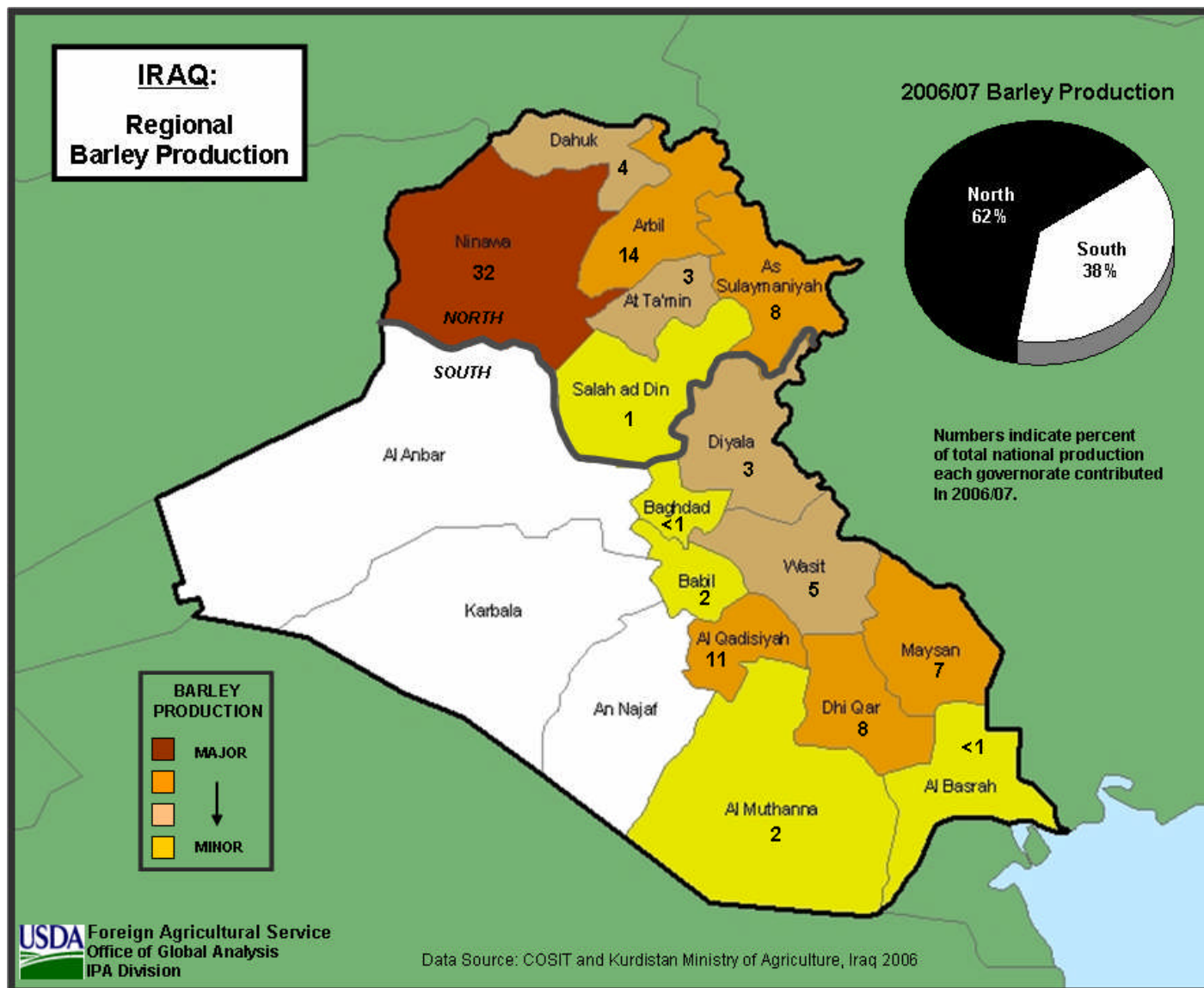


Figure A1. Percent of national wheat production broken down by agricultural region.

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Figure A2. Percent of national barley production broken down by agricultural region.

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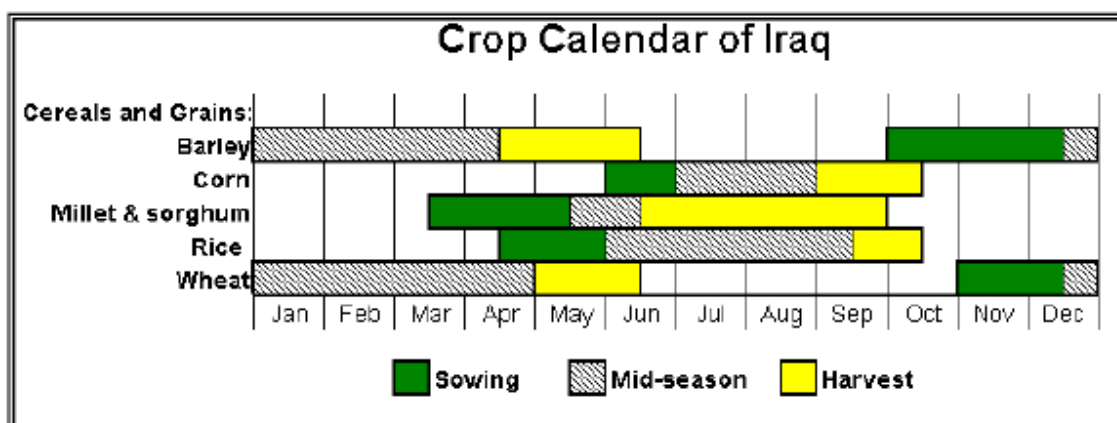


Figure A3. Crop calendar of Iraq.

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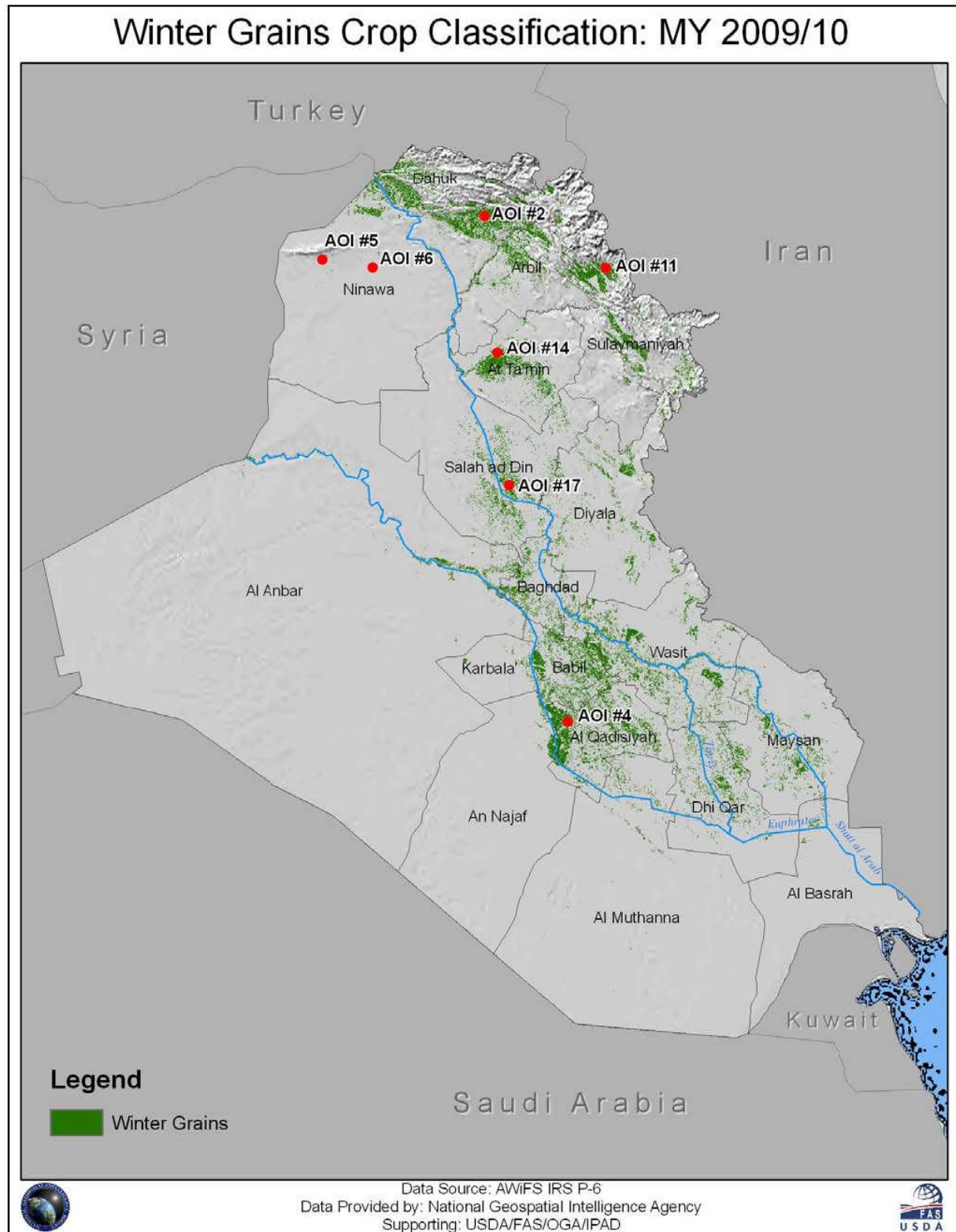
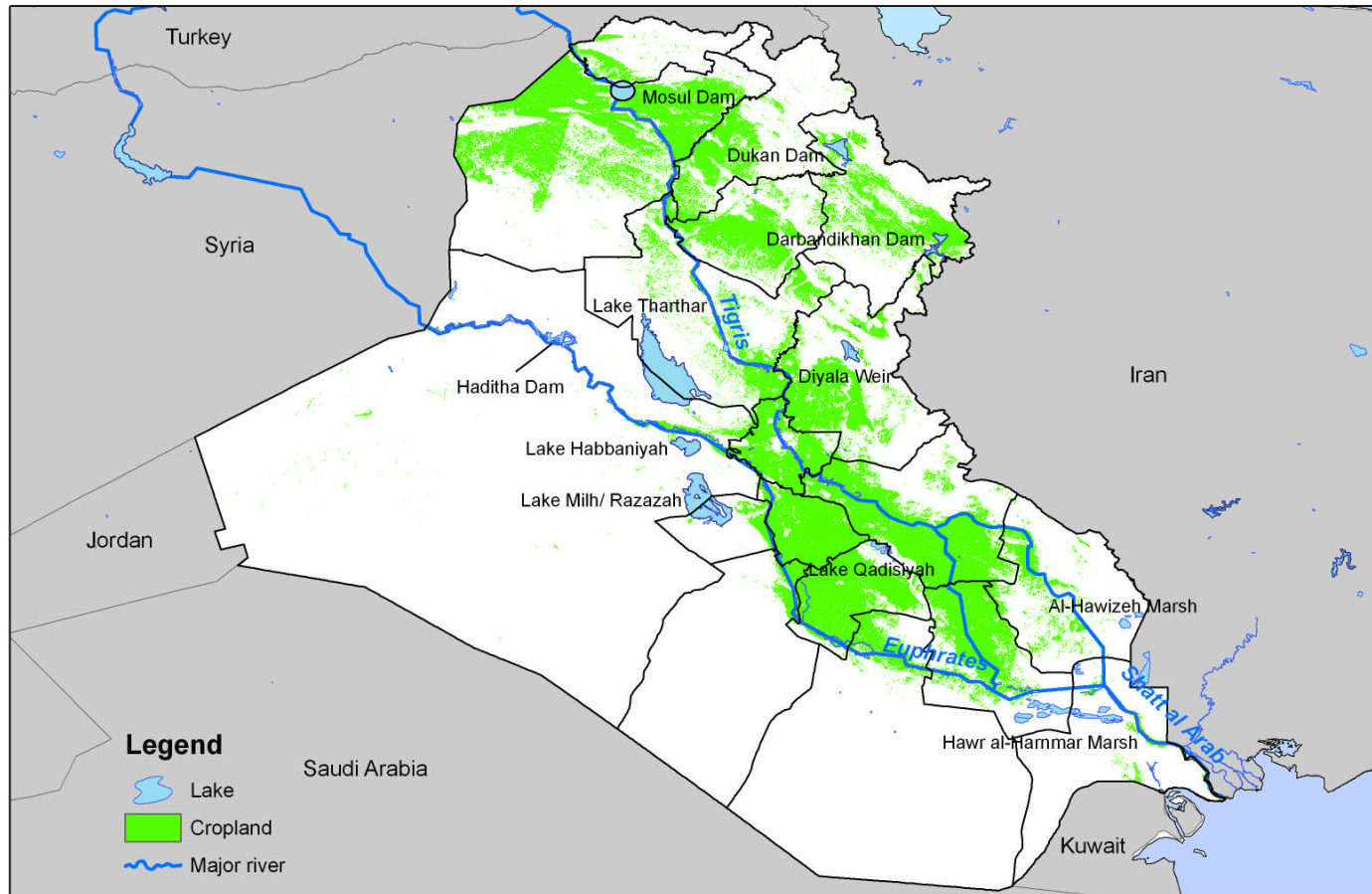


Figure A4. Winter grains map classified from AWiFS imagery. AOIs show locations of high resolution Quickbird imagery.

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Aboveground water resources in Iraq



Data analysis by USDA/FAS/OGA/IPAD and ASRC Manegement Services



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Figure A5. Major lakes and reservoirs in Iraq.

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